

Form PTO-1390  
P21939.P01U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER

P21939

TRANSMITTAL LETTER TO THE UNITED STATES  
DESIGNATED/ELECTED OFFICE (DO/EO/US)  
CONCERNING A FILING UNDER 35 U.S.C. 371U.S. APPLICATION NO. (If known, see 37 CFR  
1.5)

10/030178

INTERNATIONAL APPLICATION NO.

PCT/DE00/02658

INTERNATIONAL FILING DATE

02 August 2000

PRIORITY DATE CLAIMED

03 August 1999

TITLE OF INVENTION

METHOD AND DEVICE FOR DRYING, SEPARATING, CLASSIFYING AND DECOMPOSING RECOVERABLE WASTE PRODUCTS

APPLICANT(S) FOR DO/EO/US

Harald MARTIN and Hartwig STREITENBERGER

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information.

1. ☒ This is a FIRST submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to promptly begin national examination procedures (35 U.S.C. 371(f)).
4. ☒ The US has been elected by the expiration of 19 months from the priority date (PCT Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
  - a. ☒ is attached hereto (required only if not communicated by the International Bureau).
  - b. ☒ has been communicated by the International Bureau.
  - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☐ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
7. ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
  - a. ☐ are attached hereto (required only if not communicated by the International Bureau).
  - b. ☐ have been communicated by the International Bureau.
  - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
  - d. ☐ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).  
"Unexecuted"
10. ☐ An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (U.S.C. 371(c)(5)).

Items 11 to 16 below concern other document(s) or information included:

11. Assignee: \_\_\_\_\_
12. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
13. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
14. ☐ A FIRST preliminary amendment.  
☐ A SECOND or SUBSEQUENT preliminary amendment.
15. ☐ A substitute specification.
16. ☐ A change of power of attorney and/or address letter.
17. ☐ Figure of Drawing to be published \_\_\_\_\_
18. ☒ Other items or information:  
Cover Sheet and International Application as published in German.  
PCT/IPEA/416(in German).  
PCT/IPEA/409-with four sheets of amended pages(in German).  
PCT/IB/501.  
PCT/IB/304.  
~~PCT/IB/305.~~  
PCT/IB/332.  
PCT/ISA/210.  
Cover Letter under 35 U.S.C. 371 and 1.495  
Claim of Priority.

19. ☒ The following fees are submitted:

CALCULATIONS PTO USE ONLY

## Basic National Fee (37 CFR 1.492(a)(1)-(5)):

Search report has been prepared by the EPO or JPO. .... \$ 890.00  
International preliminary examination fee paid to USPTO (37 CFR 1.482). .... \$ 710.00  
No international preliminary examination fee paid to USPTO (37 CFR 1.482) but  
international search fee paid to USPTO (37 CFR 1.445(a)(2)) ..... \$ 740.00  
Neither international preliminary examination fee (37 CFR 1.482) nor  
international search fee (37 CFR 1.445(a)(2)) paid to USPTO. .... \$1,040.00  
International preliminary examination fee paid to USPTO (37 CFR 1.482) and all  
claims satisfied provisions of PCT Article 33(2)-(4). .... \$ 100.00

ENTER APPROPRIATE BASIC FEE AMOUNT =

\$890.00

Surcharge of \$130.00 for furnishing the oath or declaration later than \_\_\_\_ 20 \_\_\_\_ 30  
months from the earliest claimed priority date (37 CFR 1.492(e)).

\$

Claims	Number Filed	Number Extra	RATE
Total Claims	- 20 =		X \$18.00
Independent Claims	- 3 =		X \$84.00

\$

Multiple dependent claim(s) (if applicable) + \$280.00 \$

TOTAL OF ABOVE CALCULATIONS = \$890.00

☒ Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced  
by 1/2. \$

SUBTOTAL = \$890.00

Processing fee of \$130.00 for furnishing the English translation later than \_\_\_\_ 20 \_\_\_\_ 30  
months from the earliest claimed priority date (37 CFR 1.492(f)). +

Extension of Time fee in the amount of \$

TOTAL NATIONAL FEE = \$890.00

Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be  
accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property +

TOTAL FEES ENCLOSED = \$890.00

Amount to be  
refunded \$

Charged \$

a. ☒ A check in the amount of \$890.00 to cover the above fees is enclosed.b. ☐ Please charge my Deposit Account No. \_\_\_\_\_ in the amount of \$\_\_\_\_\_ to cover the above fees.c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to  
Deposit Account No. 19-0089.NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed  
and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO CUSTOMER NO. 7055

AT THE PRESENT ADDRESS OF:

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07055

PATENT TRADEMARK OFFICE

SIGNATURE  
Neil E. Greenblum  
NAME28,394  
REGISTRATION NUMBER

Method and device for drying, separating, classifying, and decomposing recoverable waste products

#### Technical Field

[0001] The invention relates to the fields of mechanical engineering, waste management, and the paper industry, and concerns a method and a device for drying, separating, classifying, and decomposing recoverable waste products, especially already partially decomposed waste products that result after a degassing or gasification process (pyrolysis).

#### Prior Art

[0002] In the processing of recovered paper in the recycling process, residual substances remain after the slurring of the mechanical desludging. These residual substances can contain, in varying amounts, concentration, and type, clumped paper, cardboard residues, pieces of plastic, wood residues, metal parts, and more besides. All of these residual substances are called rejects.

[0003] After exiting the slurry process and optionally after an intermediate storage in which a gravimetric dewatering can take place, these rejects are generally deposited in a hazardous waste landfill.

[0004] At this point, these rejects contain on average 50% water, which can occur as surface water and also as water absorbed in the paper and wood portion.

[0005] Various methods and devices are already known or have been described that include the processing and/or incineration and/or gassing of waste, residual substances, and also rejects.

[0006] According to EP 0 609 802 A1, a method and a device are known for the continuous degassing and/or gasification of a solid combustible or waste material.

[0007] The device comprises a shaft-like reactor in which the charge, the gaseous gasification agent and the gaseous combustible produced are conducted downwards co-currently. The gasification agent is preheated by the gaseous combustible in a screw-shaped counterflow heat exchanger situated in the jacket part. This preheated gasification agent is further heated in helical or undulating channels in the ceramic furnace body of the reactor and in a movable or fixed conical or paraboloid-shaped central body projecting into the lower part of the charge and serving as a furnace closure. The grate is formed by a rotatable opposing piece representing a full cone or a hollow-cone-shaped annular body that can be displaced vertically, which opposing piece leaves open opposite the lower part of the furnace, an adjustable annular passage for the withdrawal of the gaseous combustible produced and for the discharge of the solid or liquid reaction products in the form of ash, slag, distillation residues.

[0007.1] A waste incinerator and a process for the incineration of waste is known from DE 28 16 282 A1. The incinerator comprises a hollow body having an open upper and lower end, a floor plate that seals the lower end, and a central opening and a plurality of openings in the floor plate arranged in the circumferential direction through which oxidation gas under pressure can travel into the hollow body, heat transfer particles in the hollow body that are fluidized by the oxidation gas, and an apparatus for feeding the waste from above.

[0007.2] A fluidized bed is formed over the floor plate by the heat transfer particles, in that the oxidation gas is blown in through the central opening and through the openings arranged in the circumferential direction vertically upwards and horizontally in the circumferential direction. The waste is conducted into the fluidized bed and is incinerated there, and incineration gases forming in the chamber are incinerated above the fluidized bed.

[0008] The disadvantage of this method and device is that the solid combustibles or waste are not completely degassed and/or gasified.

### Description of the Invention

[0009] The object of the invention is to provide a method and a device that after the degassing and/or gasification of waste, further converts the remaining residual products as completely as possible and recovers them. The object is achieved by the invention indicated in the claims. Further developments are a subject of the sub-claims.

[0010] By means of the device according to the invention and the method according to the invention, it is possible to further convert recoverable waste products as completely as possible and in particular the not yet completely decomposed waste from degassing or gasification processes, so that they can be passed on to the environment and/or landfills substantially

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without special measures and as free as possible of pollutants.

**[0011]** The device according to the invention functions as follows.

The solid recoverable waste products from for example a pyrolysis process in which the waste has already been partially or largely converted, are introduced into a shaft-like chamber from above and/or together with the waste gas. They are deposited first in the funnel-shaped lower part of the chamber. The funnel-shaped part can advantageously be constructed in the shape of a truncated cone or in the shape of a shaft thereby and be arranged linearly, centrally, and/or decentralized. After the first solid recoverable waste products have been deposited and then during the further charging of the chamber with the solid recoverable waste products, air, advantageously prewarmed air, is blown in from below through the double-walled part of the discharge opening, which is arranged in the center in the funnel-shaped part of the chamber. This takes place advantageously under a pressure of 6-8 kPa.

**[0012]** The funnel-shaped part of the chamber is advantageously constructed in the shape of a truncated cone and wholly or partially with double walls in its upper part, whereby a defined gap can be implemented between the two walls.

**[0013]** Simultaneously the waste gases from the pyrolysis process, the pyrolysis gas, and/or a solid/gas mixture, likewise advantageously from the pyrolysis process, are introduced into the chamber tangentially, through the likewise double-walled feed shaft parallel to the funnel-shaped part of the chamber. Openings force the pyrolysis gas and/or the solid/gas mixture into the area of the deposited solid and into the solid, where it meets the introduced air. The pyrolysis gas is likewise introduced under a pressure of 6-8 kPa.

**[0014]** The openings through which the air and the waste gases arrive in the chamber are advantageously formed by two truncated-cone-shaped components nested one inside the other in the truncated-cone-shaped part of the chamber. An annular gap is formed respectively by these components between the chamber wall and the first component, and between the two truncated-cone-shaped components. These annular gaps are again likewise advantageously variable, in that the components are arranged so that they can be displaced with respect to one another and to the chamber wall. By changing the size of the annular gap, the flow rate of the amount of introduced air and waste gas can be regulated.

[0015] As it passes through the solid bed, the pyrolysis gas is freed of solid constituents, such as coke and ash.

[0016] The introduced air can already react with the solids as it passes through the solid bed. The carbon present and the hydrocarbons are thereby converted to CO, CO<sub>2</sub>, H<sub>2</sub>O and H<sub>2</sub>. The heat of reaction released thereby causes the temperature to rise in the solid bed and causes the temperature of the gas mixture to rise to about 1200°C. This temperature is sufficient to crack the higher gaseous hydrocarbons in the gas mixture.

[0017] A burner is installed in the upper, advantageously cylindrical, part of the chamber to start the entire process and to ensure the reaction temperature.

[0018] The gas exiting in the upper area of the chamber is largely freed of carbon and higher hydrocarbons and exhibits nitrogen and a high percentage of CO and H<sub>2</sub>. The solid particles still present in the gas can be separated in a downstream centrifugal cyclone separator.

[0019] The largely converted carbon- and hydrocarbon-free solid material can be discharged through the discharge opening.

The residual substances not converted, such as ash- and carbon residues, are collected in the centrally arranged collecting funnel and are discharged via the subsequent shaft with the ash discharge.

[0020] Due to the air-pyrolysis gas mixture blown upwards, a rotationally symmetrical eddy that has the shape of a fountain in the axial direction is formed in the chamber, by means of which the loosely deposited solid is picked up and carried from the chamber wall into the axial area of the chamber. There the completely or partially converted solids fall down onto the chamber floor at different points, depending on their density, and thus can be extracted, advantageously in classified form. Solids that can not be lifted by the air flowing in are likewise extracted through the discharge opening.

[0021] The flow that develops is stable and can be further stabilized by incorporating a guide pipe to make the circulation of the solids uniform when the fill height varies. Even variations of the air throughput can not change the flow in wide areas.

### Best Way of Carrying Out the Invention

[0022] The invention is explained in more detail below based on an exemplary embodiment.

[0023] The shaft-like chamber is a cylindrical container with a diameter of 2000 mm and a jacket length of 4000 mm, closed at the top with a bumped head and constructed in the lower area in the shape of a truncated cone with a slope of  $45^\circ$ . A tangentially cut gas vent pipe with a diameter of 500 mm is situated in the upper area of the jacket. The chamber is seated on a mount in the area of the transition between the cylindrical part and the truncated-cone-shaped part of the container. The jacket of the container is made of carbon steel and is protected from the reaction gases with a brick lining 200 mm thick. The truncated-cone-shaped floor has in an axial orientation an adapter flange with a diameter of 1000 mm for the air feed. The truncated-cone-shaped floor part moreover has a lateral annular gap cut over  $180^\circ$ , via which the waste gas and the solids are together introduced tangentially at a flow rate of 20 m/s and are distributed uniformly over the circumference of the chamber. Two guide blades formed in the shape of truncated cones are arranged one inside the other in the form of a funnel towards the center. The larger and more deepset has a diameter of 700 mm and the other has a diameter of 500 mm. The air entering axially upwards penetrates the solid bed and encounters the waste gases. The gas mixture draws the solid particles outwards and up the container wall and reacts thereby with the gas mixture. The flow falls inwards and becomes calm in the upper third of the container, so that the not yet thermally decomposed carbon particles and the ash portions fall downwards again. There they encounter a collecting funnel arranged in the center, which funnel passes through to the lower area and is emptied by a screw conveyor. The hot gas mixture causes a reaction with the  $700^\circ\text{C}$  carbon particles, releasing energy that heats the gas mixture and the reactor wall to  $1200^\circ\text{C}$ . Due to the large cross section of the container and the associated flow calming, sufficient reaction time is provided to decompose the carbon into CO and  $\text{CO}_2$ . The residual moisture of the process gas is converted with carbon thereby to CO and  $\text{H}_2$ . The two components described in the shape of truncated cones, between which the air and the waste gases exit,

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are arranged so that they can be displaced via attachments so that the flow rates can be optimized. The two components are made of ceramic.

**[0024]** To ensure that a chemical reaction is initiated, in particular in the starting process and later as a safety ignition source, a pilot burner in the form of a plasma burner with a power of 4 kW, which works independent of pressure and can be switched on and off in any operating situation, is arranged axially in the lower cylindrical part of the container.

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## Claims

1. Method for the process of drying, separating, classifying, and decomposing waste products from a waste degassing and/or gasification process in which the solid waste products are introduced into a shaft-like chamber with the waste gases and are deposited wholly or partially in the funnel-shaped lower part of this shaft-like chamber, and simultaneously and/or subsequently air and the waste gases from the degassing and/or gasification process are introduced separately into the chamber from below under pressure, whereby the air is introduced into the chamber substantially axially and the waste gases are introduced into the chamber substantially tangentially, resulting in a rotationally symmetrical, fountaining eddying of the solid and gaseous substances in the chamber, and subsequently or during the continuous process the dried, separated, classified, and substantially decomposed products are discharged from the chamber downwards.
2. Process according to Claim 1, in which the recoverable waste products used comprise coke, ash, hydrocarbons,  $\text{CO}_2$ ,  $\text{CO}$ ,  $\text{H}_2$ ,  $\text{H}_2\text{O}$ .
3. Process according to Claim 1, in which the air in the truncated-cone-shaped floor of the chamber is introduced axially through the round, double-walled part of the discharge shaft.
4. Process according to Claim 1, in which the air is preheated and/or is introduced into the chamber under a pressure of 6-8 kPa.
5. Process according to Claim 1, in which the waste gases are introduced tangentially through openings in the truncated-cone-shaped part of the chamber, whereby they encounter the introduced air in the area of the solids.
6. Process according to Claim 1, in which the waste gases are introduced into the chamber under a pressure of 6-8 kPa.

7. Process according to Claim 1, in which the air- and waste gas [flow] rate is regulated.
8. Process according to Claim 1, in which in the area of the truncated-cone-shaped floor of the chamber, one or two truncated-cone-shaped components nested one inside the other form one or two annular gaps that can be displaced with respect to one another and to the chamber floor, whereby the air is introduced axially through an annular gap and the waste gases are introduced tangentially or radially through the other annular gap.
9. Process according to Claim 1, in which the air- and/or waste gas [flow] rates are regulated by changing the size of the annular gap.
10. Process according to Claim 1, in which a pilot burner arranged in the cylindrical part initiates the reaction in the start-up condition and ensures the constant maintenance of the reaction in the operating condition.
11. Device for drying, separating, classifying, and decomposing recoverable waste products, in particular recoverable waste products from a waste degassing and/or gasification process, comprising a shaft-like reaction chamber whose floor is formed in the shape of a funnel and in this floor separate openings are present for the entry of air and of the waste gases from a degassing and/or gasification process, whereby these openings are arranged so that the air enters the reactor chamber substantially axially from below and the waste gases enter the reactor chamber substantially tangentially or radially, and in which an opening in the funnel-shaped floor of the reactor chamber serves to discharge the dried, separated, classified, and decomposed products and in which, moreover, a gas discharge opening is present in the upper part.
12. Device according to Claim 11, in which the funnel-shaped lower part of the chamber is formed in the shape of a truncated cone or a shaft.

13. Device according to Claim 11, in which the truncated-cone-shaped part of the chamber and the discharge shaft are constructed wholly or partially with double walls.
14. Device according to Claim 11, in which the openings for the air and the waste gases in the truncated-cone-shaped part are arranged so that the gas flows meet at least partially inside the deposited solids.
15. Device according to Claim 11, in which the size of the openings is variable.
16. Device according to Claim 11, in which the openings are formed by one or two truncated-cone-shaped components nested one inside the other in the truncated-cone-shaped part of the chamber in the form of one or two annular gaps, whereby the air flows through one annular gap and the waste gases flow into the chamber through the other annular gap.
17. Device according to Claim 11, in which the two truncated-cone-shaped components are arranged so that they can be displaced with respect to one another and to the chamber wall.
18. Device according to Claim 11, in which the opening for the waste gases is an annular gap cut laterally over  $180^\circ$ .
19. Device according to Claim 11, in which the discharge shaft has several openings into which the classified end products can be discharged separately.
20. Device according to Claim 11, in which a pilot burner is arranged in the cylindrical part of the chamber.

(12) NACH DEM VERTRAG ÜBER DIE INTERNATIONALE ZUSAMMENARBEIT AUF DEM GEBIET DES  
PATENTWESENS (PCT) VERÖFFENTLICHTE INTERNATIONALE ANMELDUNG

(19) Weltorganisation für geistiges Eigentum  
Internationales Büro



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8. Februar 2001 (08.02.2001)

PCT

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(81) Bestimmungsstaaten (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

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Veröffentlicht:

— Ohne internationalen Recherchenbericht und erneut zu veröffentlichen nach Erhalt des Berichts.

Zur Erklärung der Zweibuchstaben-Codes, und der anderen Abkürzungen wird auf die Erklärungen ("Guidance Notes on Codes and Abbreviations") am Anfang jeder regulären Ausgabe der PCT-Gazette verwiesen.

(54) Title: METHOD AND DEVICE FOR DRYING, SEPARATING, CLASSIFYING AND DECOMPOSING RECOVERABLE WASTE PRODUCTS

(54) Bezeichnung: VERFAHREN UND VORRICHTUNG ZUM TROCKNEN, TRENNEN, KLASSIEREN UND ZERSETZEN VON ABPRODUKTEN

(57) Abstract: The invention relates to a method and to a device used in the field of waste management, especially a method and a device for treating recoverable waste products that have already partially decomposed. The aim of the invention is to provide a method and a device which makes it possible to further decompose, if possible completely, and recover the residual products that remain once the waste products are degassed. According to the inventive method, air and waste gases are introduced separately from the bottom into the chamber and pressure is applied. The air is introduced into the chamber in a substantially axial and the waste gases in a substantially tangential or radial orientation. The invention further provides a device the funnel-shaped bottom of which is provided with openings for air and waste gases to enter. The air is introduced into the reactor chamber from the bottom in a substantially axial orientation and the waste gases in a substantially tangential or radial orientation.

(57) Zusammenfassung: Die Erfindung bezieht sich auf das Gebiet der Abfallwirtschaft und betrifft ein Verfahren und eine Vorrichtung insbesondere für die Bearbeitung von bereits teilweise zersetzten Abprodukten. Die Aufgabe der Erfindung besteht darin, ein Verfahren und eine Vorrichtung anzugeben, die nach der Entgasung von Abfallstoffen die verbleibenden Restprodukte weiter und möglichst vollständig umsetzt und verwertet. Die Aufgabe wird gelöst durch ein Verfahren, bei dem Luft und Abgase getrennt von unten in die Kammer unter Druck eingebracht werden, wobei die Luft im wesentlichen axial und die Abgase im wesentlichen tangential oder radial in die Kammer eingebracht werden. Die Erfindung wird weiterhin gelöst durch eine Vorrichtung, bei der im trichterförmigen Boden getrennte Öffnungen für den Eintritt von Luft und von den Abgasen vorhanden sind, wobei die Luft im wesentlichen axial von unten und die Abgase im wesentlichen tangential oder radial in den Reaktorraum eintreten.

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Page 1 of 3

**Declaration and Power of Attorney For Utility or Design Patent Application**Erklärung für Patentanmeldungen zur Gebrauchsmessung und Entwicklung  
mit Vollmacht**German Language Declaration**Als nachstehend benannter Erfinder erkläre ich hiermit an Eides  
Statt:

daß mein Wohnsitz, meine Postanschrift und meine Staatsangehörigkeit den im nachstehenden nach meinem Namen aufgeführten Angaben entsprechen, daß ich nach bestem Wissen der ursprüngliche, erste und alleinige Erfinder (falls nachstehend nur ein Name angegeben ist) oder ein ursprünglicher, erster und Miterfinder (falls nachstehend mehrere Namen aufgeführt sind) des Gegenstandes bin, für den dieser Antrag gestellt wird und für den ein Patent für die Erfindung mit folgendem Titel beantragt wird:  
**VERFAHREN UND VORRICHTUNG ZUM TROCKNEN, TRENNEN, KLASSIEREN UND ZERSETZEN VON ABPRODUKTEN**  
deren Beschreibung hier beigefügt ist, es sei denn (in diesem Falle Zutreffendes bitte ankreuzen), diese Erfindung

☒ wurde angemeldet am 2 August 2000  
unter der US-Anmeldenummer 10/030.178  
und wurde am                      abgeändert (falls zutreffend)  
oder  
☐ unter der PCT internationalen Anmeldungsnummer  
PCT/DE00/02658  
und wurde am 27 September 2001 abgeändert (falls zutreffend).

Ich bestätige hiermit, daß ich den Inhalt der oben angegebene Patentanmeldung, einschließlich der Ansprüche, die eventuell durch einen oben erwähnten Zusatzantrag abgeändert wurde, durchgesehen und verstanden habe.

Ich erkenne meine Pflicht zur Offenbarung jeglicher Informationen an, die zur Prüfung der Patentfähigkeit in Einklang mit Titel 37, Code of Federal Regulations, § 1.56 von Belang sind.

Ich beanspruche hiermit ausländische Prioritätsvorteile gemäß Title 35, US-Code, § 119 (a)-(d), bzw. § 365(b) aller unten aufgeführten Auslandsanmeldungen für Patente oder Erfindurkunden, oder § 365(a) aller PCT internationalen Anmeldungen, welche wenigstens ein Land außer den Vereinigten Staaten von Amerika benennen, und habe nachstehend durch ankreuzen sämtliche Auslandsanmeldungen für Patente bzw. Erfindurkunden oder PCT internationale Anmeldungen angegeben, deren Anmeldedatum dem der Anmeldung, für welche Priorität beansprucht wird, vorangeht.

**Prior Foreign Applications**  
Frühere ausländische Anmeldungen

<u>199 37 521.6</u>	<u>Germany</u>	<u>3/August/1999</u>
(Number)	(Country)	(Day/Month/Year Filed)
(Number)	(Land)	(Tag/Monat/Jahr der Anmeldung)
<u>                    </u>	<u>                    </u>	<u>                    </u>
(Number)	(Country)	(Day/Month/Year Filed)
(Number)	(Land)	(Tag/Monat/Jahr der Anmeldung)

☐ Zusätzliche einstweilige Anwendungsnummern sind im  
Prioritätsantrag aufgeführt.

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

**METHOD AND DEVICE FOR DRYING, SEPARATING, CLASSIFYING AND DECOMPOSING RECOVERABLE WASTE PRODUCTS**

the specification of which is attached hereto unless the following box is checked:

☒ was filed on 2 August 2000 as  
United States Application Number 10/030.178  
and was amended on                      (if applicable)  
or,

PCT International Application Number PCT/DE00/02658  
and was amended on 27 September 2001 (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56.

I hereby claim foreign priority under Title 35, United States Code § 119 (a-d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT international application which designated at least one country other than the United States, listed below. I have also identified below, by checking the "No" box, any foreign application for patent or inventor's certificate, or of any PCT international application having a filing date before that of the application on which priority is claimed:

**Priority Claimed**  
Prioritätsanspruch

<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Ja	Nein
<input type="checkbox"/> Yes	<input type="checkbox"/> No
Ja	Nein

☐ Additional foreign application numbers are listed on a supplemental priority sheet attached hereto.

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Ich beanspruche hiermit Prioritätsvorteile unter Title 35, US-Code, § 119(e) aller US-Hilfsanmeldungen wie unten aufgezählt.

I hereby claim the benefit under Title 35, United States Code § 119(e) of any United States provisional application(s) listed below.

(Application Number)  
(Aktenzeichen)

(Day/Month/Year Filed)  
(Tag/Monat/Jahr der Anmeldung)

(Application Number)  
(Aktenzeichen)

(Day/Month/Year Filed)  
(Tag/Monat/Jahr der Anmeldung)

(Application Number)  
(Aktenzeichen)

(Day/Month/Year Filed)  
(Tag/Monat/Jahr der Anmeldung)

- ☐ Zusätzliche einstweilige Anmelde-nummern sind im ergänzenden Prioritätsanhang aufgeführt.

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Ich beanspruche hiermit die mir unter Title 35, US-Code, § 120 zurechenenden Vorteile aller unten aufgeführten US-Patentanmeldungen bzw. § 365(c) aller PCT internationalen Anmeldungen, welche die Vereinigten Staaten von Amerika benennen, und erkenne, insofern der Gegenstand eines jeden früheren Anspruchs dieser Patentanmeldung nicht in einer US-Patentanmeldung, bzw. PCT internationalen Anmeldung in in einer gemäß dem ersten Absatz von Title 35, US-Code, § 112 vorgeschriebenen Art und Weise offenbart wurde, meine Pflicht zur Offenbarung jeglicher Informationen an, die zur Prüfung der Patentfähigkeit in Einklang mit Title 37, Code of Federal Regulations, § 1.56 von Belang sind und die im Zeitraum zwischen dem Anmeldetag der früheren Patentanmeldung und dem nationalen oder im Rahmen des Verfahrens über die Zusammenarbeit auf dem Gebiet des Patentrewesens (PCT) gültigen internationalen Anmeldetags bekannt geworden sind.

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☐ (Application No.)  
(Aktenzeichen) (Day/Month/Year Filed)  
(Tag/Monat/Jahr eingereicht)

(Status)  
(patentiert, schwebend, aufgegeben)  
(patented, pending, abandoned)

(Application No.)  
(Aktenzeichen) (Day/Month/Year Filed)  
(Tag/Monat/Jahr eingereicht)

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## German Language Utility or Design Patent Application Declaration

**VERTRETUNGSVOLLMACHT:** Als benannter Erfinder beauftrage ich hiernit den sich mit der Kundennummer befassenden Patentanwalt (Patentanwälte) und/oder Patent-Agenten mit der Verfolgung der vorliegenden Patentanmeldung sowie mit der Abwicklung aller damit verbundenen Geschäfte vor dem Patent- und Warenzeichenamt und weise an, dass alle Korrespondenz mit dieser Kundennummer adressiert wird.

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